

Claims

1. A gas discharge display panel comprising a substrate, a dielectric layer, and a protective layer, the dielectric layer and the protective layer being formed in the stated order on a surface of the substrate, wherein

the protective layer has a first protective film and a second protective film, the second protective film is formed on at least part of a surface of the first protective film, and the first protective film has a larger impurity content than the second protective film.

2. The gas discharge display panel of Claim 1, wherein the second protective film is formed on an entirety of the surface of the first protective film.

3. The gas discharge display panel of Claim 1, wherein the second protective film is formed so that, under each of display electrodes, at least part of the surface of the first protective film is exposed.

4. The gas discharge display panel of Claim 3, wherein an area ratio of an overlapping part of the second protective film with the first protective film under the display electrodes is in a range of 10% to 90% inclusive.

5. The gas discharge display panel of Claim 1, wherein a film thickness of the second protective film is in a range of 10nm to 1 μ m inclusive.

6. The gas discharge display panel of Claim 1, wherein
a film thickness of the second protective film is in a range
of 10nm to 100nm inclusive.

5

7. The gas discharge display panel of Claim 1, wherein
the impurity contained in the first protective film is at least
one of H, Cl, F, Si, Ge, and Cr.

10

8. The gas discharge display panel of Claim 1, wherein
the impurity content of the first protective film is in a range
of 10ppm to 10000ppm inclusive.

15

9. The gas discharge display panel of Claim 1, wherein
each of the first protective film and the second protective
contains at least one metal oxide material selected from the group
consisting of MgO, CaO, BaO, SrO, MgNO, and ZnO.

20

10. The gas discharge display panel of Claim 9, wherein
each of the first protective film and the second protective
film contains MgO.

25

11. The gas discharge display panel of Claim 9, wherein
the first protective film contains BaO, and the second
protective film contains MgO.

12. The gas discharge display panel of Claim 1, wherein
the second protective film is formed in one of island-like

formation or in stripe formation.

13. A manufacturing method of a gas discharge display panel, the manufacturing method comprising:

5 a display-electrode forming step of forming a plurality of pairs of display electrodes on a first substrate;

a dielectric-layer forming step of forming a dielectric layer to cover the pairs of display electrodes;

10 a protective-layer forming step of forming a protective layer on a surface of the dielectric layer; and

a substrate-arranging step of arranging a second substrate to oppose the first substrate with a distance therebetween, wherein

15 in the protective-layer forming step, the protective layer is formed by forming a first protective layer on the surface of the dielectric layer under a condition where an atmospheric air is blocked, and then by forming a second protective film on at least part of a surface of the first protective film under the condition where an atmospheric air is blocked, the first protective film having a larger impurity content than the second protective layer.

20

14. The manufacturing method of Claim 13, wherein

in the protective-layer forming step, at least one of the first protective film and the second protective film is formed using a sputtering method.

25